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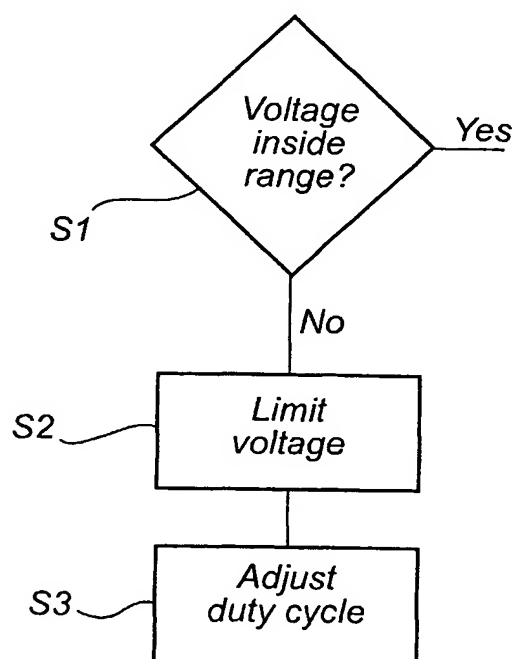
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(54) Title: AN ORGANIC LED DISPLAY DEVICE AND A METHOD FOR DRIVING SUCH A DEVICE



(57) Abstract: A method for driving an organic LED display device having a first and a second electrode sandwiching an organic layer defining a plurality of light emitting elements. The method comprises applying to a light emitting element a voltage within a specified voltage range, within which the risk of short circuits between the electrodes is reduced, and controlling the duty cycle of said light emitting element, so that a desired light intensity is emitted from said light emitting element. The probability of short circuits in pixels of an organic LED display device is thus reduced by avoiding operating the display pixels within voltage ranges where the chance of short circuits is high. This limitation of the applied voltage is compensated by controlling the duty cycle of the light emitting element.

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 225 557 A (MATSUSHITA ELECTRIC IND CO LTD) 24 July 2002 (2002-07-24) paragraphs '0065!', '0066!', '0129!', '0130!', '0132!', '0133!', '0156!', '0174!', - '0185!', '0203!', '0204!'  -/--	1-21

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HONG Y ET AL: "NOVEL POLY-SI TFT PIXEL ELECTRODE CIRCUITS AND CURRENT PROGRAMMED ACTIVE-MATRIX DRIVING METHODS FOR AM-OLEDs" 2002 SID INTERNATIONAL SYMPOSIUM DIGEST OF TECHNICAL PAPERS. BOSTON, MA, MAY 21 - 23, 2002, SID INTERNATIONAL SYMPOSIUM DIGEST OF TECHNICAL PAPERS, SAN JOSE, CA : SID, US, vol. VOL. 33 / 1, 21 May 2002 (2002-05-21), pages 618-621, XP001134284 figure 2	1-21
A	US 6 291 942 B1 (FUJITA SUSUMU ET AL) 18 September 2001 (2001-09-18) abstract column 2, lines 33-48 column 3, lines 32-36 column 7, line 30 - column 8, line 37 column 9, lines 6-14	4-13, 17-21

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 03/05432

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1225557	A	24-07-2002	EP 1225557 A1	24-07-2002
			CN 1377495 T	30-10-2002
			WO 0126085 A1	12-04-2001
			JP 2001350442 A	21-12-2001
			TW 472277 B	11-01-2002
US 6291942	B1	18-09-2001	JP 2001013903 A	19-01-2001

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